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FINNISH GAME RESEARCH ON WATERFOWL, 1948-1957

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As suggested by the 3rd Congress of the International Union of Game Biologists at Aarhus, where game biologists interested in co-operation between the countries on the Baltic Sea and the North Sea met, a list was prepared in the Finnish Game Research Institute on the literature published on waterfowl in Finland in the years 1945-57. The list comprises a good 200 publications (HELMINEN 1958).

As all the researchers concerned have agreed on the extreme importance of the exchange of information, the present writer offers this short report on the most important waterfowl studies in Finland made by the Finnish Game Research Institute and published in 1946-1959. Apart from three papers, they are all incorporated in Helminen's list.

Actual research on waterfowl was started at the Game Research Institute in the summer of 1948. The results, of course, only came later. The first published studies were therefore of a more or less introductory and general nature, intended to arouse interest in and provide information on the protection and preservation of waterfowl and on research concerned with the Finnish waterfowl population. Of these investigations, mention may be made of a study on topical problems concerning the preservation of game in the archipelago (BERGMAN 1946) and an article on practical measures for the preservation of seafoal within the program of societies for the seafoal preservation (DANIELSSON 1948). To the same group belong an account of the 36 waterfowl protection associations in the Finnish archipelago (GRENQUIST 1951), a detailed report on the 22 waterfowl reserves covering c. 350 islands on the Finnish coast (BERGMAN 1951) and an article on waterfowl and human settlement in the archipelago (BERGMAN 1953). A detailed program for game research into waterfowl of the Finnish archipelago has been published (GRENQUIST 1948), also a bird guide with illustrations in black and white (RAITASUO 1948). Waterfowl fauna in certain districts were studied in: On the bird fauna of the western archipelago of Porvoo (PAAVOLAINEN 1950), On the bird fauna of the outer islands in the eastern parts of the Finnish Gulf, I and II (PAAVOLAINEN 1957), Ainalinjärvi, a waterfowl lake in central Finland (MERIKALLIO 1952), On the former abundance of Mallard, Goldeneye, Goosander and Red-breasted Merganser, mainly in Central Finland, On hunting of waterfowl and collecting of eggs in the parish of Konnevesi in older times (PYNNÖNEN 1957a, 1957b). According to an article on oil damage in Finland's territorial waters in 1948-55 catastrophes have occurred chiefly in the autumn and winter in the outer parts of the Gulf of Finland and the south-western archipelago, especially in 1949, 1951 and 1955, affecting tens of thousands migrating and wintering Long-Tailed Ducks (GRENQUIST 1956a).

In the following account of the individual species the data on the fluctuation in numbers in the archipelago in the 1950s derive mainly from unpublished material in the archives of the Finnish Game Research Institute.

The Mallard (*Anas platyrhynchos* L.). Of 133 recoveries of juvenile Mallards ringed or wing-marked in Finland, the great majority was made within the Baltic and North Sea area. A good 38 per cent were found in Finland, the corresponding percentage being

16 for Denmark, 9 for Sweden, 8 for Germany, 8 for France, 6 for England, 6 for the USSR and 2 for Holland. The majority of the juvenile birds still remained in Finland in September and October; they migrated in November and were found in Southern-Swedish and Danish waters in November-December and on the southern North Sea coast in December-January (KOSKIMIES 1956a). Of the same Mallards, 43 per cent lived over $\frac{1}{2}$ year, 17 per cent over $1\frac{1}{2}$ years and only one of the 133 marked juvenile Mallards was alive after $5\frac{1}{2}$ years (KOSKIMIES 1956b).

The Scaup (*Aythya marila* L.) was quite a common resident in the western archipelago thirty years ago. In 1950 it had disappeared from Åland and the breeding population in Quark in the Gulf of Bothnia was about 50 per cent of the population 20 years ago (GRENQUIST 1951). In the late 1950s a remarkable increase has been noted in the Quark archipelago.

The Tufted Duck (*Aythya fuligula* L.) spread most remarkably to the archipelago in the middle of the 1930s. Apparently, in 1939-40 a complete change occurred and there was a very severe decline which continued until 1946-47. In 1948 or 1949 the decline appears to have ceased (GRENQUIST 1951) and during the 1950s the population in the archipelago has increased.

The Goldeneye (*Bucephala clangula* L.) was still perhaps the commonest seafoal species in the interior of Finland and in its inner archipelago in the first half of the 1920s, but diminished markedly in the 1930s and throughout the 1940s (GRENQUIST 1951). A vigorous increase, however, has been established throughout the country during the 1950s. This increase is connected in Finland with purposeful work for the preservation of the Goldeneye with the aid of nesting-boxes which are put out at a time which has to all appearances been very favourable for the reproduction and continuance of the Goldeneye. Of great importance in this connection has been the research on the Goldeneye carried out at the Evo experimental station of the Game Research Institute under the direction of DR. L. SIIVONEN. Abstracts of these investigation-results necessary for practical Goldeneye preservation work have been published as popular science articles. Mention may be made for instance of: On increasing the number of Goldeneye population with the help of nest-boxes, etc. (SIRÉN 1951, 1957a, 1957b).

Among the investigations of Evo may be mentioned a study on the incubation rhythm, humidity and temperature conditions in the nest, the young from hatching to fledging, the female-young relations and the behaviour of the young in relation to the environment (SIRÉN 1952). The female Goldeneye take their young away from the bigger open waters to wooded terrain where there are woodland lakes, ponds and pools of water in which the young find suitable food and shelter, etc. Similar terrain can easily be produced artificially (SIRÉN 1957a).

Some 11 per cent of the Goldeneyes wing-marked in Finland have been recovered and the majority of the long distance recoveries have been made in Denmark and Sweden. Many Goldeneyes have been found nesting in the same boxes as they used to do previously - a female nested 5 years in succession in the nest - or 1-4 km from the previous nesting site (SIRÉN 1957b, KOSKIMIES and RAJALA 1959).

The Long-tailed Duck (*Clangula hyemalis* L.) migrates above all along the Gulf of Finland and in smaller numbers along the Gulf of Bothnia. Migration also occurs in the interior, and the size and number of the flocks in Southern and Central Finland decrease from east to west (GRENQUIST 1954).

The Velvet Scoter (*Melanitta fusca* L.). The populations in the archipelago of Southern

and South-western Finland have increased in the last few decades, most strikingly in the outer islands where in the 1920s the bird was very scarce (GRENQUIST 1951, 1952).

A Velvet Scoter population in the outer archipelago in 1948–57 was studied by DR. J. KOSKIMIES et al. at one of the observation stations of the Game Research Institute, the bird sanctuary of Aspskär in the Gulf of Finland. A preliminary test of the reliability of a census based on the counting of pairs showed that the census of the Velvet Scoter must be carried out in spring when practically all breeding individuals appear in pairs (KOSKIMIES 1949). The investigations concerned with the breeding biology of the Velvet Scoter at Aspskär in 1948–53 (KOSKIMIES & ROUTAMO 1953) is dealing with the biology of the species from its appearance in April/May until hatching in July. Among other things it was established that different females regularly lay eggs of constant length, breadth and shape, that the last egg in 12 clutches was smaller than the other eggs (KOSKIMIES 1957c), and also that the size of 128 clutches and the laying date of the first egg of 104 clutches both tend to be individually constant. Females laying the largest average clutches tend to start laying earlier than those producing small clutches (KOSKIMIES 1957b).

The studies of the female and the broods were based on a total of 183 observation days in the years 1948–57 among the maritime populations on Aspskär during the period the female cares for its young. The mortality of juvenile Velvet Scoters in the area varied in the different years from 90 to 100 per cent (KOSKIMIES 1957a) and, as a rule, at least 90–95 per cent of the downy young died during their first 5–10 days of life (KOSKIMIES 1955). The principal, direct reason was the weather conditions and, very likely, the fluctuations in the water temperature. The raids made by the Lesser Black-backed Gulls constitute the second important, direct cause of mortality (KOSKIMIES 1957a). Juvenile mortality among Velvet Scoters is very high, up to 85–100 per cent (PAAVOLAINEN 1957) also in the other parts of the outer archipelago of the Gulf of Finland and it is probable that the bird is on the whole incapable of rearing offspring anywhere in the outer archipelago of the Gulf of Finland. The reason for the poor reproduction of Velvet Scoter in the outer skerries is probably the fact that the species was originally an inhabitant of the inland lakes and is not adapted to maritime conditions (KOSKIMIES 1957a).

The breeding population of female Velvet Scoter on Aspskär, of which 37 were marked in 1948–55, shows a maximum annual mortality rate of 5 per cent. This percentage corresponds to an average life expectancy of some twenty years for the adult bird (KOSKIMIES 1957d). The success of the archipelago colonization is proof that total mortality has not exceeded the limit set in these conditions for the successful development of the population, and that a sizeable production of offspring succeeds only in districts with especially suitable biotops but nevertheless relatively thinly populated and in summers of extremely favourable weather conditions (KOSKIMIES 1957d). The increase in the archipelago populations of the Velvet Scoter may perhaps be explained by an influx from somewhere else, where reproduction is better, whether from the inner archipelago or from the inland areas, where the broods survive better, but where the Velvet Scoters nevertheless have decreased (KOSKIMIES 1955).

The Eider (*Somateria mollissima* L.) increased during the 1920s and reached a maximum in the spring of 1930. After a short decline a new maximum was reached either in 1933 or 1934 or probably as late as in the early spring 1935, which year was the beginning of a long decline that apparently lasted until the end of the second world war (GRENQUIST 1951). Since 1947 an increase has been noted, which between 1947 and 1951 was most remarkable in 1949 (GRENQUIST 1952). During the 1950s the increase has continued.

The Goosander (*Mergus merganser* L.) and the Red-breasted Merganser (*Mergus serra-*

tor L.). The Red-breasted Merganser has since 1948 shown a tendency to increase in the inner parts of the Finnish and the Bothnian Gulf.

The nesting of 63 Goosanders in wooden boxes above the ground on an island in the Archipelago Sea was studied in summer 1953 and the nesting of 50 Red-breasted Mergansers in boxes on the ground in a little island in the Gulf of Finland was studied in 1955-57. The results were published as game management studies (GRENQUIST 1953, 1958).

The Grey Lag Goose (*Anser anser* L.) decreased both in the 1930s and the 1940s. In the 1950s a slight increase in the very rare Grey Lag Goose populations has been observed, apparently due to its total protection since 1947. The whole Grey Lag Goose population in Finland, breeding mainly in the south-western archipelago and in the northern parts of the Gulf of Bothnia, is estimated at quite 200 pairs (GRENQUIST 1951, 1956b). Attempts were made to reintroduce the species in the Finnish Gulf in the 1950s (BERGMAN 1956).

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ZUSAMMENFASSUNG

FINNISCHE UNTERSUCHUNGEN ÜBER WASSERWILD

M. HELMINEN's Liste von 1958 mit gut 200 finnischen Publikationen seit 1945 über Wasserwild erläutert der Referent mit einer Übersicht der wichtigsten Untersuchungen, welche das Finnische Institut für Wildforschung in dieser Periode gemacht hat.

Tatsächliche Forschung begann das Institut im Sommer 1948. In vorbereitenden Publikationen wurde Interesse für Forschung und Schutz des Wasserwildes nachgestrebt.

Von Studien über einzelne Arten soll Folgendes erwähnt werden:

Stockente (*Anas platyrhynchos* L.): Es wurde 133 markierte Exemplare angetroffen, die meisten im Baltikum und Nordseegebiet. Das Wegziehen geschah hauptsächlich im November, das Antreffen in Süd-Schweden und den Dänischen Gewässern im November-Dezember und an der Nordseeküste im Dezember-Januar: 43% war ein halbes Jahr alt, 17% 1½ Jahr und nur eines 5½ Jahr. Von den Vögeln wurde 38% in Finnland, 16% in Dänemark, 9% in Schweden, 8% in Frankreich, 8% in Deutschland, 6% in England, 6% in Russland und 2% in Holland geschossen.

Bergente (*Aythya marila* L.): früher vereinzelt im westlichen Archipel; in 1950 von Åland verschwunden und in Quarken im Bottnischen Meerbusen eine Brutpopulation von 50% in Vergleich zu 20 Jahren früher. In den letzten Jahren hat die Art dort beträchtlich zugenommen.

Reiherente (*Aythya fuligula* L.): im Archipel ernstlicher Rückgang in 1939–1947, darauf Stillstand, im heutigen Dezennium ein deutliches Steigen.

Schellente (*Bucephala clangula* L.): in den zwanziger Jahren der gemeinste Entenvogel im Binnenland und inneren Archipel, nachher fortwährender Rückschritt bis ein starkes Steigen seit 1950 zum Teil dank den Nistkästen.

Eisente (*Clangula hyemalis* L.): zieht hauptsächlich dem Finnischen Meerbusen entlang – dem Bottnischen weniger –, auch im Binnenland mit einem abnehmenden Vorzug von Ost nach West.

Samtente (*Melanitta fusca* L.): in den letzten Jahrzehnten hat die Population im südlichen und südwestlichen Archipel und vor allem in der Meereszone sich bedeutend vermehrt. In einer Inselgruppe, Åpskärs, in der Meereszone des Finnischen Meerbusens ist die Art in 1948–1947 studiert worden. Länge, Breite und Form der Eier ist per Individuum konstant und so auch die Grösse und die Legezeit der Eier; Weibchen mit grösserer Brut fangen im allgemeinen das Legen früher an als die mit kleinerer. Mortalität der Jungen: 90–95% in den ersten 5–10 Lebenstagen, zufolge des Wetters und wahrscheinlich des Temperaturwechsels des Wassers, und ferner der Raubzüge gewisser Möwen. Beobachtungen auf anderen Inseln im äusseren Archipel des Finnischen Meerbusens lieferte dasselbe ungünstige Bild (85–100%), was darauf weist, dass diese Art, die ursprünglich ein Bewohner der Binnenseen ist, noch nicht an maritime Verhältnisse adaptiert ist. Die Brutpopulation von 37 markierten Weibchen zeigte eine jährliche Maximalsterblichkeit von 5%, was mit einer durchschnittlichen Lebensdauer von 20 Jahren des erwachsenen Vogels übereinkommt. Eiderente (*Somateria mollissima* L.): ein und ein halb Dezennium unregelmässiges Steigen, darauf ein Rückfall 1935–1945, wieder durch Steigen in den fünfziger Jahren gefolgt.

Mittelsäger (*Mergus serrator* L.): Die Art hat sich in den inneren Teilen des Finnischen und des Bottnischen Meerbusens seit 1948 vermehrt.

Graagans (*Anser anser* L.): Nach wenigstens zwei Dezenningen von Zurückgang Steigen in den fünfziger Jahren dank dem völligen Schutz seit 1947. Die ganze Population wird auf 200 Paaren geschätzt. Die Art brütet hauptsächlich im südwestlichen Archipel und in den nördlichen Teilen des Bottnischen Meerbusens.

SAMENVATTING

FINSE ONDERZOEKINGEN OMTRENT WATERWILD

M. HELMINEN's lijst van 1958 met de ruim 200 Finse publikaties sinds 1945 over waterwild licht de referent toe met een overzicht van de belangrijkste onderzoeken die het Finse Instituut voor Wildonderzoek in die tijd heeft gedaan.

Feitelijk onderzoek begon het Instituut in de zomer van 1948, na voorbereidende publikaties die dienden om belangstelling te wekken voor onderzoek en bescherming van waterwild.

Uit studies over bepaalde soorten het volgende:

Wilde eend (*Anas platyrhynchos* L.): Er werden 133 jonge exemplaren (geringd of gevleugelmerkt) aangetroffen, waarvan de meeste in het Balticum en het Noordzeegebied. Het wegtrekken geschiedde in November, de terugmelding in Zuid-Zweden en de Deense wateren in november-december, en aan de Noordzeekust in december-januari; 43% was een half jaar oud, 17% 1½ jaar en slechts één 5½ jaar. Van de vogels werd 38% in Finland geschoten, 16% in Denemarken, 9% in Zweden, 8% in Frankrijk, 8% in Duitsland, 6% in Engeland, 6% in Rusland en 2% in Nederland.

Toppereend (*Aythya marila* L.): vroeger schaars voorkomend in de westelijke archipel, is in 1950 verdwenen van Aland; in dat jaar op Quark (Botnische Golf) nog slechts een broedbevolking van 50% t.o.v. 20 jaar vroeger. In de laatste jaren daar aanzienlijk toegenomen.

Kuifeend (*Aythya fuligula* L.): in de archipel ernstige daling in ca. 1939-'47, daarna stilstand, in huidige decennium stijging.

Brilduiker (*Bucephala clangula* L.): in de jaren '20 de meest voorkomende zeevogel in het binnenland van Finland en in de binnenarchipel, daarna voortdurende daling tot scherpe stijging sinds 1950 dank zij nestkastjes.

Ijseend (*Clangula hyemalis* L.): trekt hoofdzakelijk langs de Finse, minder langs de Botnische Golf, en ook in het binnenland, met hier een dalende voorkeur van oost naar west.

Grote zeeëend (*Melanitta fusca* L.): de laatste jaren hogere bevolking in de zuidelijke en zuidwestelijke archipel, en vooral op de buiteneilanden, waar hij zeer weinig meer voorkwam. Op een dezer, en wel het vogeloord Aspskär (Finse Golf), is er in 1948-'57 studie van gemaakt. De telling geschiedt het best in het voorjaar wegens het dan paarsgewijze verschijnen van vrijwel alle broedparen. Lengte, breedte en vorm van de eieren is per individu constant en zo ook de legdatum van het eerste ei; bij grotere legfels begint het leggen over het algemeene eerder dan bij kleinere. De sterfte der jongen: 90-100% in de eerste 5-10 levensdagen, ten gevolge van het weer en waarschijnlijk ook de temperatuurswisseling van het water, alsmede van predatie door bepaalde meeuwen. Waarnemingen op andere eilanden in de buitenarchipel van de Finse Golf leverde een zelfde ongunstig beeld op, nl. 85-100%, hetgeen wijst op een nog niet aangepast zijn van deze soort (oorspronkelijk bewoner van meren in het binnenland) aan maritieme omstandigheden. De broedbevolking wees voor wijfjes (waarvan er 37 werden gemerkt) een jaarlijks sterftcijfer van maximaal 5% aan, wat overeenkomt met de gemiddelde levensduur van de volwassen vogel, nl. 20 jaar. De stijging van de bevolking in deze archipel zal te danken zijn aan immigratie uit streken (binnenland en eilanden) die een hogere reproductie te zien gaven, maar waar de soort toch achteruitging.

Eidereend (*Somateria mollissima* L.): een decennium van schommelende stijging, dan een van daling (1935-'45), gevolgd door weer de omkering.

Middelste zaagbek (*Mergus serrator* L.): vermeerdering sedert 1948 in de binnendelen van de Finse en de Botnische Golf.

Grauwe gans (*Anser anser* L.): na twee decennia van daling, in het lopende een lichte stijging dank zij de volledige bescherming sinds 1947. De totale bevolking geschat op slechts 200 paren. Het broeden geschiedt voornamelijk in de zuidelijke archipel en het noorden van de Botnische Golf. Gepoogd wordt in de Finse Golf de soort als broedvogel weer in te voeren.

DISCUSSION

THAMDRUP: Has the Mallard population in Finland shown any remarkable decrease during the last 20-25 years?

GRENQUIST: I can not say anything definite because no regular counts have been made of breeding Mallards. The hunter's bag is decreasing the last twenty years and the observations of our Institute point to the same direction. One of the reasons might be the disappearance of shallow waters in southern parts of the country.

HARDENBERG: What is the cause of the increase of some species and the decrease of other ones?

GRENQUIST: In the 1950's an increase has been observed in diving ducks: Eider, Tufted Duck, Velvet Scoter. This is presumably due to the absence of hard winters such as occurred in the first half of the previous decennium.

BORG: I can not agree with the opinion that mild winters would be the cause of an increase. For 1957 was a severe winter and in Sweden many Eiders died for hunger and for parasitic diseases.

GRENQUIST: In Finland no dead Eiders were found and no decrease of the number of nesting pairs could be stated in 1957.

FRANK: In Germany every year more ducks are harvested. Most of them will not belong to the German breeding population because they are shot during migration in October/November.

EYGENRAAM: This does not prove that all of them are migratory ducks. In Holland inland Mallards are shot and captured in duck decoys until the end of the open season: January 31st. It would be useful if Germany would ring more ducks, e.g. in duck decoys.

GÄBLER: In der Deutschen Demokratischen Republik nehmen auch jetzt die Stockenten noch ab.

MÜLLER-USING: Die Mehrzahl der geschossenen Enten im November, Dezember und Januar sind keine deutschen Enten, sondern aus Skandinavien und Holland. Das weisen die Ringfunde aus.

EYGENRAAM: In den Küstgebieten kann das tatsächlich der Fall sein. Bei uns nimmt die Stockentenbevölkerung dermassen zu, dass die Schusszeit um zwei Wochen verlängert wurde wegen erheblicher Schäden an die Landwirtschaft.

FRANK: Noch eine Bemerkung. Die Zunahme der Brutenten in Deutschland könnte dadurch verursacht sein, da sie ruhig brüten können, weil sie nur wenig natürliche Feinde haben.

Date Due

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Pam 598.412 : (*56)

Grenquist, P.
Finnish game research on
waterfowl, 1946-1957.

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